



TFP780A

### Description

The TFP780A 780 nm Fabry-Perot Gain Chip is mounted in a half-butterfly package that includes a TEC and thermistor. When used in the TLK-L780M laser kit, this gain chip provides amplification for light in the 750 to 790 nm range. This chip is optimized for high gain, high power, broad tunability, and minimal mode hopping.

### Laser Cavity Performance\*

\*Different external laser cavities will produce different performance specifications. The data given here is only valid for the specified reference cavity.



		TFP780A		
		Min	Typical	Max
Reference Laser Cavity		Littman Cavity: TLK-L780M		
Center Wavelength		760 nm	770 nm	780 nm
Tuning Range <sup>a</sup>		15 nm	30 nm	-
Peak Power		5 mW	10 mW	-
Wavelength Tuning Resolution		-	-	1 pm
Tuning Speed		-	-	40 nm/s
Linewidth		-	100 kHz	130 kHz
Side Mode Suppression Ratio (SMSR)		30 dB	45 dB	-
Polarization Extinction Ratio		-	-	-
Power Stability <sup>b</sup>	30 s	1%	-	-
	24 hr	10%	-	-
Wavelength Stability <sup>b</sup>	30 s	-	-	1 pm
	24 hr	-	-	50 pm

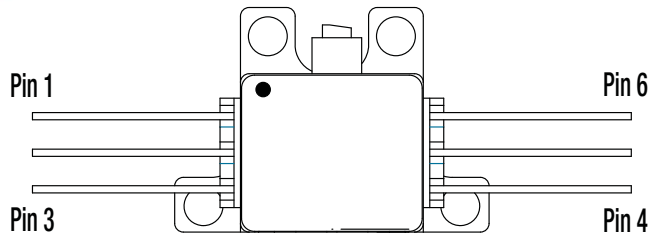
<sup>a</sup> 10 dB, <sup>b</sup> Running open loop, measured using ITC4020 current controller.

### ASE Performance

T<sub>OP</sub> = 25 °C

		TFP780A		
		Min	Typical	Max
Center Wavelength		750 nm	780 nm	790 nm
3 dB Bandwidth		15 nm	30 nm	-
Operating Current		-	80 mA	-
Chip Forward Voltage		-	-	2 V
Gain Ripple, RMS <sup>a</sup>		-	3 dB	-
Power, Front Facet <sup>b</sup>		-	3 mW	-

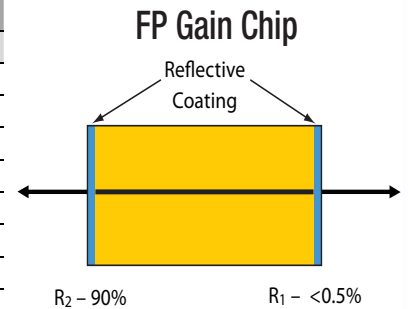
<sup>a</sup> @ I<sub>OP</sub>, <sup>b</sup> Measured using OSA with 0.1 nm resolution bandwidth; <sup>b</sup> Free-space output power



- | Pin Identification |
|--------------------|
| 1. TEC +           |
| 2. Thermistor      |
| 3. Thermistor      |
| 4. Dev. Anode      |
| 5. Dev Cathode     |
| 6. TEC -           |

## Additional Specifications

	TFP780A		
	Min	Typical	Max
Chip Gain <sup>a</sup>	-	-	-
Angled Facet Reflectivity <sup>b</sup> (R <sub>1</sub> )	-	0.01%	0.50%
Normal Facet Reflectivity (R <sub>2</sub> )	-	90%	95%
Lateral Beam Exit Angle	-	0°	-
Beam Divergence (FWHM)	$\theta_T$	30°	-
	$\theta_L$	10°	-
Operating Current <sup>c</sup>	-	140 mA	180 mA
Operating Temperature (Non-Condensing)	-	25 °C	-
TEC Forward Voltage	-	-	3.6 V
TEC Forward Current	-	-	2.1 A
Chip Length	-	0.75 mm	-
Waveguide Refractive Index	-	3.2	-
Astigmatism	-	1 $\mu$ m	3 $\mu$ m
Fiber Type	NA		
Fiber Connector	NA		
Peak Optical Isolation	-	-	-
Fiber Coupling Efficiency	-	-	-



<sup>a</sup> Single pass optical gain at center of gain curve; <sup>b</sup> SAF chip reflectivity diagram (see above); <sup>c</sup> @ T<sub>OP</sub>

## Graphs

TFP780A Fabry-Perot Gain Chip Lasing Performance Using Littman Tunable Laser Kit

